



August 16, 2012

Mandi Richardson  
URS Corporation  
(512) 419-5321

Re: Duke Energy / Miami Fort CERT Test (Project No. 14950789)

Ms. Richardson,

Attached is the report associated with the sixteen (16) aqueous samples submitted for total metals (As, B, Be, Cd, Co, Cr, Fe, Mn, Na, Ni, Pb, Sb, Se, and Zn) analyses on August 2, 2012. The samples were received on August 3, 2012 in a sealed package at ambient temperature. Total metals analyses were performed via inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS). Any issues associated with the analyses are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak".

Ben Wozniak  
Project Manager  
Applied Speciation and Consulting, LLC

# Applied Speciation and Consulting, LLC

Report Prepared for:

Mandi Richardson  
URS Corporation

August 16, 2012

## 1. Sample Reception

Sixteen (16) aqueous samples were submitted for total metals (As, B, Be, Cd, Co, Cr, Fe, Mn, Na, Ni, Pb, Sb, Se, and Zn) analyses on August 2, 2012. The samples were received in acceptable condition on August 3, 2012 in a sealed package at ambient temperature, as recorded on the attached chain of custody (COC) forms.

The samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and designated discrete sample identifiers. All samples had been preserved with nitric acid by the client prior to reception at Applied Speciation and Consulting (ASC). The pH of each sample was confirmed to be less than 2 upon receipt, so all samples were stored in a secure enclosed container until digestion and analysis could be performed.

## 2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Total Metals Quantitation by ICP-DRC-MS All sample fractions had been preserved to pH < 2 by the client. Aliquots of each sample were placed into Teflon bombs, followed by aliquots of concentrated nitric and hydrochloric acids. All Teflon bombs were sealed and placed in a convection oven (maintained at a temperature of 105°C) for a minimum of four hours. All resulting sample digests were then analyzed via inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS).

## 3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are

**instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimal interval of every ten analytical runs.

Total Metals Quantitation by ICP-DRC-MS All samples for metals (As, B, Be, Cd, Co, Cr, Fe, Mn, Na, Ni, Pb, Sb, Se, and Zn) quantitation were analyzed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS) on August 9<sup>th</sup>, 10<sup>th</sup>, and 15<sup>th</sup>. Aliquots of each sample are introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts with either interfering ions of the same target mass to charge ratios ( $m/z$ ) or with the target analyte, producing an entirely different mass to charge ratio ( $m/z$ ) which can then be differentiated from the initial interferences. A solid-state detector detects ions transmitted through the mass analyzer, on the basis of their mass-to-charge ratio ( $m/z$ ), and the resulting current is processed by a data handling system.

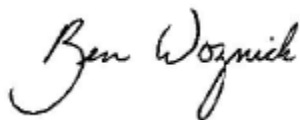
#### 4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with these samples were within acceptance limits.

It should be noted that the estimated method detection limit (eMDL) for each analyte has been calculated using the standard deviation of the method blanks that were prepared and analyzed concurrently with the submitted samples.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak". The signature is written in a cursive, flowing style.

Ben Wozniak  
Project Manager  
Applied Speciation and Consulting, LLC

Trace Metals Results for URS  
 Project Name: Duke Energy / Miami Fort CERT Test (Project No. 14950789)  
 Contact: Mandi Richardson

Date: August 16, 2012  
 Report Generated by: Ben Wozniak  
 Applied Speciation and Consulting, LLC

**Sample Results**

Sample ID	Date Collected	As	B	Be	Cd	Co	Cr	Fe
Unit 8 BW-3	7/31/2012	5.2	NR	8.52	801	1030	1.44	234*
Unit 8 BW-10	7/31/2012	4.9	NR	6.46	725	854	0.75	203*
Unit 8 BW-13	7/31/2012	5.2	NR	9.13	812	1040	1.03	240*
Unit 8 BW-2	7/31/2012	ND (<1.4)	78	NR	NR	NR	NR	ND (<18)
CCW	7/31/2012	3.5	238	0.87	0.115	0.96	2.41	1130
IDI-4	7/31/2012	4.9	NR	0.67	1.58	6.73	5.39	43
IDI-1	7/31/2012	5.0	NR	0.62	4.79	6.91	2.04	75
FB-1	8/1/2012	ND (<1.4)	ND (<13)	1.76	ND (<0.025)	ND (<0.54)	1.00	ND (<18)
Unit 8 BAS	8/1/2012	5.3	317	0.69	ND (<0.025)	ND (<0.54)	ND (<0.75)	ND (<18)
CCW	8/1/2012	3.3	245	1.77	0.099	1.06	2.33	1150
Unit 8 BW-3	8/1/2012	5.0	NR	8.49	724	1030	2.24	251*
Unit 8 BW-10	8/1/2012	4.9	NR	6.44	663	828	ND (<0.75)	208*
Unit 8 BW-13	8/1/2012	5.4	NR	8.40	767	1060	1.31	264*
Dup-100	8/1/2012	5.6	NR	9.11	778	1030	1.17	257*
IDI-1	8/1/2012	5.1	NR	ND (<0.62)	3.86	6.73	3.63	ND (<18)
IDI-4	8/1/2012	5.7	NR	ND (<0.62)	2.24	7.92	5.47	30

All results reflect the applied dilution and are reported in µg/L

ND = Not detected at the applied dilution

NR = Not requested

\* Reported from Batch 2; all other Fe results reported for Batch 1

Trace Metals Results for URS  
 Project Name: Duke Energy / Miami Fort CERT Test (Project No. 14950789)  
 Contact: Mandi Richardson

Date: August 16, 2012  
 Report Generated by: Ben Wozniak  
 Applied Speciation and Consulting, LLC

**Sample Results**

Sample ID	Date Collected	Mn	Na	Ni	Pb	Sb	Se	Zn
Unit 8 BW-3	7/31/2012	352000	659000	5560	0.044	2.27	903	13300
Unit 8 BW-10	7/31/2012	304000	575000	4820	0.047	2.47	846	9860
Unit 8 BW-13	7/31/2012	362000	679000	5740	0.067	2.30	904	13300
Unit 8 BW-2	7/31/2012	ND (<0.60)	NR	NR	NR	NR	2.88	NR
CCW	7/31/2012	99.7	60900	6.56	1.29	0.47	1.70	NR
IDI-4	7/31/2012	194	409000	7.15	ND (<0.039)	4.60	689	NR
IDI-1	7/31/2012	270	419000	6.58	ND (<0.039)	3.81	752	5.6
FB-1	8/1/2012	ND (<0.60)	142	ND (<0.51)	0.064	0.15	ND (<0.98)	ND (<1.3)
Unit 8 BAS	8/1/2012	29.9	63500	4.44	ND (<0.039)	0.65	2.31	ND (<1.3)
CCW	8/1/2012	108	66200	6.91	1.19	0.52	1.93	NR
Unit 8 BW-3	8/1/2012	344000	641000	5410	0.055	1.94	904	13100
Unit 8 BW-10	8/1/2012	288000	546000	4480	ND (<0.039)	2.15	870	9290
Unit 8 BW-13	8/1/2012	365000	737000	5840	0.139	1.99	972	13600
Dup-100	8/1/2012	347000	654000	5600	0.055	2.19	971	13200
IDI-1	8/1/2012	162	392000	6.48	0.044	3.38	624	5.8
IDI-4	8/1/2012	87.6	469000	7.86	0.068	3.55	652	NR

All results reflect the applied dilution and are reported in µg/L

ND = Not detected at the applied dilution

NR = Not requested

Trace Metals Results for URS  
 Project Name: Duke Energy / Miami Fort CERT Test (Project No. 14950789)  
 Contact: Mandi Richardson

Date: August 16, 2012  
 Report Generated by: Ben Wozniak  
 Applied Speciation and Consulting, LLC

**Quality Control Summary - Preparation Blank Summary**

Analyte	Units	Batch	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL 50x	RL 50x	eMDL 5000x	RL 5000x
As	µg/L	-	1.7	0.9	0.8	0.6	1.0	0.5	1.4	5.0	-	-
B	µg/L	-	-21	-26	-27	-31	-26	4	13	200	-	-
Be	µg/L	-	1.47	1.52	1.90	1.47	1.59	0.21	0.62	5.0	-	-
Cd	µg/L	-	0.003	-0.013	-0.007	0.005	-0.003	0.008	0.025	5.0	-	-
Co	µg/L	-	0.41	0.17	0.09	-0.01	0.17	0.18	0.54	5.0	-	-
Cr	µg/L	-	0.73	0.60	0.62	0.17	0.53	0.25	0.75	5.0	-	-
Fe	µg/L	1	12	3	-1	0	4	6	18	50	-	-
Fe	µg/L	2	10	1	3	0	3	4	13	50	-	-
Mn	µg/L	-	-1.00	-0.80	-1.18	-1.25	-1.06	0.20	0.60	5.0	60	500
Na	µg/L	-	-1	2	6	11	5	5	20	200	2000	20000
Ni	µg/L	-	0.47	0.27	0.39	0.08	0.30	0.17	0.51	5.0	51	500
Pb	µg/L	-	0.007	0.017	0.036	0.009	0.017	0.013	0.039	5.0	-	-
Sb	µg/L	-	0.32	0.25	0.30	0.25	0.28	0.04	0.12	5.0	-	-
Se	µg/L	-	0.49	0.84	0.09	0.24	0.42	0.33	0.98	5.0	-	-
Zn	µg/L	-	-1.7	-1.6	-1.2	-0.8	-1.3	0.4	1.3	50	-	-

eMDL = Estimated Method Detection Limit; please see narrative regarding eMDL calculations

RL = Reporting Limit

Trace Metals Results for URS  
Project Name: Duke Energy / Miami Fort CERT Test (Project No. 14950789)  
Contact: Mandi Richardson

Date: August 16, 2012  
Report Generated by: Ben Wozniak  
Applied Speciation and Consulting, LLC

**Quality Control Summary - Certified Reference Materials**

Analyte	Units	Batch	CRM	True Value	Result	Recovery
As	µg/L	-	TMDA-70	40.7	38.37	94.3
B	µg/L	-	LCS	500.0	533.5	106.7
Be	µg/L	-	TMDA-70	15.2	15.42	101.5
Cd	µg/L	-	TMDA-70	145	158.6	109.4
Co	µg/L	-	TMDA-70	285	286.9	100.6
Cr	µg/L	-	TMDA-70	389	392.0	100.8
Fe	µg/L	1	TMDA-70	369	394.6	106.9
Fe	µg/L	2	TMDA-70	369	365.8	99.1
Mn	µg/L	-	TMDA-70	302	299.8	99.3
Na	µg/L	-	LCS	10000	9510	95.1
Ni	µg/L	-	TMDA-70	328	326.0	99.4
Pb	µg/L	-	TMDA-70	444	434.1	97.8
Sb	µg/L	-	TMDA-70	21.7	24.46	112.7
Se	µg/L	-	TMDA-70	25.9	26.38	101.9
Zn	µg/L	-	TMDA-70	480	451.9	94.1

Trace Metals Results for URS  
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 Contact: Mandi Richardson

Date: August 16, 2012  
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**Quality Control Summary - Matrix Duplicates**

Analyte	Units	Batch	Sample ID	Rep 1	Rep 2	Mean	RPD
As	µg/L	-	IDI-4 (8/1/2012)	5.7	5.5	5.6	2.3
B	µg/L	-	Batch QC	381800	387900	384850	1.6
Be	µg/L	-	IDI-4 (8/1/2012)	ND (<0.62)	ND (<0.62)	NC	NC
Cd	µg/L	-	IDI-4 (8/1/2012)	2.236	2.224	2.230	0.5
Co	µg/L	-	IDI-4 (8/1/2012)	7.92	8.15	8.04	2.8
Cr	µg/L	-	IDI-4 (8/1/2012)	5.47	6.13	5.80	11.5
Fe	µg/L	1	IDI-4 (8/1/2012)	30	40	35	29.5*
Fe	µg/L	2	Batch QC	94	108	101	13.9
Mn	µg/L	-	IDI-4 (8/1/2012)	87.62	89.82	88.72	2.5
Na	µg/L	-	IDI-4 (8/1/2012)	468800	469300	469050	0.1
Ni	µg/L	-	IDI-4 (8/1/2012)	7.86	7.66	7.76	2.6
Pb	µg/L	-	IDI-4 (8/1/2012)	0.068	0.044	0.056	42.3*
Sb	µg/L	-	IDI-4 (8/1/2012)	3.55	3.68	3.62	3.6
Se	µg/L	-	IDI-4 (8/1/2012)	651.6	637.7	644.6	2.2
Zn	µg/L	-	Batch QC	6.6	6.0	6.3	9.1

ND = Not detected at the applied dilution

NC = Not calculated due to one or more concentrations below the eMDL

\* Sample concentrations are less than the RL



Trace Metals Results for URS  
Project Name: Duke Energy / Miami Fort CERT Test (Project No. 14950789)  
Contact: Mandi Richardson

Date: August 16, 2012  
Report Generated by: Ben Wozniak  
Applied Speciation and Consulting, LLC

**Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate**

Analyte	Units	Batch	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
As	µg/L	-	IDI-4 (8/1/2012)	500.0	607.5	120.4	500.0	620.6	123.0	2.1
B	µg/L	-	Batch QC	500.0	393000	NC	500.0	372700	NC	5.3
Be	µg/L	-	IDI-4 (8/1/2012)	500.0	597.9	119.6	500.0	597.0	119.4	0.2
Cd	µg/L	-	IDI-4 (8/1/2012)	50.00	51.98	99.5	50.00	50.75	97.0	2.4
Co	µg/L	-	IDI-4 (8/1/2012)	500.0	521.3	102.7	500.0	510.1	100.4	2.2
Cr	µg/L	-	IDI-4 (8/1/2012)	500.0	554.4	109.7	500.0	538.6	106.6	2.9
Fe	µg/L	1	IDI-4 (8/1/2012)	10000	10130	101.0	10000	9786	97.5	3.4
Fe	µg/L	2	Batch QC	10000	10050	99.5	10000	10000	99.0	0.5
Mn	µg/L	-	IDI-4 (8/1/2012)	500.0	628.9	108.0	500.0	610.1	104.3	3.0
Na	µg/L	-	IDI-4 (8/1/2012)	10000	507300	NC	10000	475600	NC	6.5
Ni	µg/L	-	IDI-4 (8/1/2012)	500.0	537.6	106.0	500.0	520.7	102.6	3.2
Pb	µg/L	-	IDI-4 (8/1/2012)	50.00	50.43	100.8	50.00	49.78	99.5	1.3
Sb	µg/L	-	IDI-4 (8/1/2012)	50.00	59.34	111.5	50.00	59.67	112.1	0.6
Se	µg/L	-	IDI-4 (8/1/2012)	500.0	1174	106.0	500.0	1186	108.3	1.0
Zn	µg/L	-	IDI-4 (8/1/2012)	500.0	526.7	104.1	500.0	511.2	101.0	3.0

NC = Not calculated; spiking level is less than one-fifth the ambient sample concentration

**APPLIED SPECIATION  
AND CONSULTING, LLC**

 18804 Northcreek Parkway  
Bothell, WA 98011

 Phone (425) 483-3300  
Fax (425) 483-9818

Company Name: <u>DUKE ENERGY   URS CORP</u>	ASC Project Manager:
Contact Person: <u>MIKE WAGNER</u>	By submitting of samples the client agrees to all terms and conditions set forth in the quotation provided by the ASC project manager. If you are not familiar with the term and conditions associated with your project, please contact your ASC representative as soon as possible (425) 483-3300.
Address: <u>525 VINE ST. CINCI. OH. 45202 - SUITE 1800</u>	
Phone Number: <u>513-651-3440</u>	Requested Turn Around Time:
Fax Number:	Method of Sample Delivery:
Email Address: <u>mike.wagner@urs.com</u>	Carrier Tracking Number:
Project Name: <u>DUKE ENERGY MIAMI FORT CERO</u>	Confirmation of Sample Reception: <input type="checkbox"/> Yes <input type="checkbox"/> No
Project Number: <u>14950787</u>	
PO Number:	

Sample ID	Bottle ID	Date and Time	Matrix*	Volume	Preservative	Initials	Requested Analytes and Methods	Comments
UNIT 8 BW-3		7/31/12 0945	WW	~120 mL	DI/HNO <sub>3</sub>	Quint	TRACE METALS*	
UNIT 8 BW-10		0955						
UNIT 8 BW-13		1020						
UNIT 8 BW-2		1150						
CCW		1300						
IDI-4		1345						
IDI-1		1405						
FB-1		8/1/12 0750	D-I			Quint		
Unit 8 BAS		0835	WW					
CCW		0900						
UNIT 8 BW3		1050						
UNIT 8 BW10		1100						
UNIT 8 BW-13		1120						
DUP-100		1200						
IDI-1		1315						
IDI-4		1325						

Relinquished by: (sign) <u>[Signature]</u> (print) <u>JOHN M. ALLEN</u>	Date/Time: <u>08-02-12 / 1230</u>	Comments:
Received by: (sign) <u>[Signature]</u> (print) <u>Wayne Lawrence</u>	Date/Time: <u>8/2/12 / 1235</u>	
Relinquished by: (sign) <u>[Signature]</u> (print) <u>Wayne Lawrence</u>	Date/Time: <u>8/2/12 / 1400</u>	Comments: <u>RT</u>
Received by: (sign) <u>[Signature]</u> (print) <u>Alex Dupler</u>	Date/Time: <u>8/2/12</u>	

Please account for each sample bottle as a separate line item for verification purposes.

\*Matrix: Air, Freshwater (FW), seawater (SW), groundwater (GW), wastewater (WW), soil (SL), sediment (SD), tissue (TS), product (P), other (O)